

# Mineral Industry Surveys

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## ZINC IN DECEMBER 1999

Estimated domestic mine production in December, expressed in zinc content of concentrate, was slightly more than in November, and 2% higher than production in December 1998. Smelter production declined by nearly 13% compared with the previous month's production and was more than 13% below production in December 1998. Apparent consumption in December decreased by more than 4%, but was still about 1% higher than in December 1998.

The *Platt's Metals Week* composite price for North American Special High Grade zinc increased by more than 2% to 57.94 cents per pound in December. Compared with December of the previous year, the price increased by more than 19%, or 9.47 cents.

In order to stimulate future zinc consumption, two new organizations were established in the United States: The GalvInfo Center and the Zinc Information Nutrition Center (ZINC). The GalvInfo Center in North Carolina was established by the International Lead and Zinc Research Organization, the cooperative research arm of the zinc industry. Financial backing for the center was provided by 14 companies with interest in galvanized steel, that is, producers of steel and zinc products. The primary goal of the organization is to answer technical inquiries about the use of metallic coated steel sheet products in which zinc is a major component of the coating. This includes galvanized and galvannealed products, Galvalume steel sheets, and Galfan steel sheets. The GalvInfo Center also will answer inquiries concerning the performance of surface treatments and paints (American Metal Market, 2000a). The American and International Zinc Associations are among a group of organizations behind the unveiling of the ZINC, a New York-based clearinghouse of information about the health benefits of zinc. Housed on the campus of Rockefeller University since late September, the ZINC also includes the New York Hospital-Cornell Medical College and the Memorial Sloan-Kettering Cancer Center among its avid backers. Researchers indicate that zinc has become a favorite subject of clinical investigation since a Tufts University study found it to be the number one nutritional deficiency in American children. Ultimately, the center hopes to expand its efforts to

benefit children in undeveloped countries (American Metal Market, 2000b).

According to the Metals Economics Group (MEG) of Halifax, Nova Scotia, expenditures in metal exploration declined during the past 2 years—31% in 1998 and a further 23% in 1999—to a total of \$2.16 billion in 1999. MEG expects that exploration budgets will remain at a low level in the short term, because of the lag between an upturn in commodity prices and increased investment in exploration. The 1999 base metal exploration budgets of the 132 companies, included in both the 1998 and 1999 surveys, totaled \$801 million, \$133 million lower than in 1998. However, a higher proportion of total exploration spending was targeted toward base metals, rising from 33% in 1998 to 37% in 1999. Most of the base metal exploration budget was directed toward copper exploration, followed by zinc and nickel. For the fifth consecutive year, Latin America has been the most favored target for exploration. It accounted for 38% of total worldwide expenditures for base metal exploration. Australia and Canada ranked second and third in the list of base metal targets. MEG's breakdown by exploration site reveals that nearly 41% of exploration expenditures in the United States were used for seeking new resources within the vicinity of an existing mine. By contrast, grassroots exploration accounted 33% of the total spent (Mining Journal, 2000).

Mexican mining giant, Industrias Peñoles S.A. de C.V., which saw metal production decline by an average 15% at its Torreón plant in 1999 owing to environmental problems, expects its zinc production to increase by nearly 70% in 2000. Monthly output, currently running at about 12,000 metric tons, will start rising in March as capacity increases to 220,000 tons from 120,000 tons. The increase will be gradual, reaching full capacity in September. An average of 60% of the concentrates now processed at Torreón, located in the northern state of Coahuila, are produced by Peñoles mines. As smelter capacity is increased, the production of concentrates will increase as well. During the second half of 2000, production at the Fresnillo Mine, in the central state of Zacatecas, is set to increase from 0.9 million tons to 1.2 million tons (Metal

Bulletin, 2000c).

Chinese zinc producers are waiting expectantly for the news on the future of the country's zinc export licensing system. The Government is restricting the issuance of zinc export licenses to avoid chaotic pricing and the possible decline of zinc export prices due to too many zinc suppliers wishing to earn foreign exchange. Also, according to domestic traders, many Chinese consumers often fail to pay on time, so suppliers would rather export at lower prices as long they are paid on time. Based on exports during January-September, Chinese refined zinc exports in 1999 are expected to reach about 400,000 tons, 20,000 tons more than in 1998. In the longer term, Chinese zinc exports should decline gradually due to growing local consumption. According to industry experts, total zinc exports could fall to around 270,000 tons per year by 2003, from a record of 550,000 tons in 1997 (Platt's Metals Week, 2000b).

China's Yunnan Lanping Nonferrous is one company that is planning on a future increase in domestic zinc consumption. The company is in joint-venture negotiations with several foreign parties for a \$500 million expansion of its zinc ingot production capacity. This massive project, which will raise the company's current 10,000-ton capacity to 260,000 tons per year, is expected to take three years to complete. To accommodate the planned new ingot capacity, Lanping's expansion project also includes plans to raise concentrate production by increasing ore-handling capacity from 1,000 tons to 5,000 tons per day (Platt's Metals Week, 2000a).

Pasminco Ltd. of Australia has settled zinc treatment charges for contracts in 2000 with its Asian customers. By doing so, Pasminco may have set a precedent for other companies to follow. Treatment charges, negotiated between Pasminco and Korea Zinc Co. Ltd. and the Japanese smelting pool, will rise to \$189, based on \$1,000 per ton of zinc metal. The de-escalator is 14.25 cents and escalators are 16 cents up to a price of \$1,100 per ton, 17 cents up to \$1,200, and 18 cents above \$1,200 per ton of zinc metal. Most of the concentrate for Asian smelters will be supplied by the Broken Hill Mine, with a smaller portion coming from Pasminco's new Century Mine. Pasminco's Budel smelter in the Netherlands is expecting its first shipment of concentrates from the Century Mine at the end of January. Commissioning of Century is expected to be completed by March 1 and the company intends to start regular monthly shipments at an initial rate of 25,000 tons rising to 40,000 tons per month by the middle of 2000. This, however, will be still about 50% of capacity. Pasminco expects the mine to be in full production at a rate of 500,000 tons per year of contained zinc in 2001 (Metal Bulletin, 2000b). The increased zinc production during the quarter that ended on December 31, 1999, may be slowed by a zinc leak at Pasminco's Cockle Creek smelter in New South Wales. Smelter output for the quarter ending in December totaled 168,087 tons of zinc metal, up from 131,803 tons a year before. The increase in quarterly zinc metal production was attributed to the contribution from the Clarksville plant in Tennessee and the strong performance at the Hobart plant in Australia (Platt's Metals Week, 2000d). The leak from the top section of the refinery column at the Cockle Creek smelter was discovered on December 20. Attempts to stop the leak have been unsuccessful, and the column had to be closed. The refinery's

output will be limited to about 50% until a replacement column can be brought on line. The company anticipates a return to full capacity by the end of January (Platt's Metals Week, 2000c).

The existence of Ireland's Tara mine, Europe's largest zinc mine, was placed in peril because of a strike by some of its miners. The strike stemmed from cost-cutting measures to ensure the mine's economic viability. Earlier, in July 1999, the mine was on the verge of closure when a deal was made which included a cut in underground worker's bonus payments, increased shift flexibility, and voluntary elimination of a number of redundancies. The company's proposal to reduce cost was related to the cost-cutting deal agreed on in July but was rejected by the striking workers. This rejection could possibly endanger the future of Tara because the mine owner, Finish metals producer Outokumpu Oy, indicated that it will refuse funding for a proposed deepening of the mine if the strike did not end quickly. The deepening could extend the life of the mine by 8 years. Because about 30% of the mine workers are refusing to work, the mine is operating at only 60% of its total capacity, losing revenue at a rate of about \$1.6 million per month. At the request of the Irish Government, both sides agreed to extend the deadline to early February (Metal Bulletin, 2000a).

During Tara's labor problems, another Irish mine has been coming on stream. The Lisheen Mine is under development in County Tipperary and will be the world's seventh largest mine when it opens. With Tara, if it remains active, and the Galmoy Mine, Lisheen will make Ireland the seventh largest producer of zinc concentrate in the world. Minorco Lisheen Ltd., jointly owned by Ivernia West plc and Anglo American Corp., has already secured a 5-year contract for 70% of the mine's output. Lisheen retained control of 30% to take advantage of tight global zinc markets. At peak production, Lisheen will produce 1.5 million tons of ore per year from 200 meters below the surface, resulting in 320,000 tons of concentrate. The deposit extends over 2 square kilometers with some 19 million tons of minable ore grading 13% zinc and 2.2% lead (Tony Roddam, January 27, 2000, Ireland zinc, accessed January 27, 2000, at URL <http://woza.co.za/reuters/jan00/zincireland27.html>).

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TABLE 1  
SALIENT ZINC STATISTICS 1/

(Metric tons)

	1998	1999			
	January- December	October	November	December	January- December
Production:					
Mine, zinc content of concentrate	755,000	71,600	65,500	66,000 e/	808,000
Mine, recoverable zinc	722,000	67,800	62,000	63,000 e/	766,000
Smelter, refined zinc	380,000	31,500 r/	31,200 r/	27,200	355,000
Oxide (gross weight)	153,000	9,320 r/	9,880 r/	7,910	123,000
Consumption:					
Refined zinc, reported	647,000	42,800 r/	41,100 r/	39,800	504,000
Ores e/ (zinc content)	1,020	85	85	85	1,020
Zinc-base scrap e/ (zinc content)	225,000	18,800	18,800	18,800	225,000
Copper-base scrap e/ (zinc content)	200,000	16,700	16,700	16,700	200,000
Aluminum- and magnesium-base scrap e/ (zinc content)	1,240	103	103	103	1,240
Total e/	1,070,000	78,500 r/	76,800 r/	75,400	932,000
Apparent consumption, metal 2/	1,290,000	127,000 r/	114,000 r/	109,000 3/	1,430,000
Stocks of refined (slab) zinc, end of period:					
Producer 4/	9,060	8,960 r/	8,730 r/	8,730	XX
Consumer 5/	69,900	62,100 r/	61,400 r/	61,500	XX
Merchant	13,300	9,370	9,710	9,690	XX
Total	92,300	80,400 r/	79,800 r/	80,000	XX
Shipments of zinc metal from Government stockpile	26,000	--	2,320	2,290	22,100
Imports for consumption:					
Refined (slab) zinc	879,000	95,500	80,000	NA	980,000 6/
Oxide (gross weight)	58,900	5,290	5,710	NA	59,000 6/
Ore and concentrate (zinc content)	46,300	8,830	3,090	NA	58,600 6/
Exports:					
Refined (slab) zinc	2,330	213	295	NA	1,580 6/
Oxide (gross weight)	6,210	419	391	NA	6,810 6/
Ore and concentrate (zinc content)	552,000	67,100	14,400	NA	500,000 6/
Waste and scrap (gross weight)	35,000	1,770	2,600	NA	25,300 6/
Price:					
London Metal Exchange, average, dollars per metric ton	1,024.11	1,148.36	1,146.77	1,183.34	1,075.96
Platt's Metals Week North American Special High Grade, average, cents per pound	51.43	56.61	56.53	57.94	53.48

e/ Estimated. r/ Revised. NA Not available. XX Not applicable.

1/ Data are rounded to three significant digits, except prices; may not add to totals shown.

2/ Smelter production plus imports minus exports plus shipments from Government stockpile plus stock change.

3/ Data based on reported consumption, stocks and estimated trade data.

4/ Data from U.S. Geological Survey and American Bureau of Metal Statistics.

5/ Includes an estimate for companies that report annually.

6/ Includes data through November only.

TABLE 2  
REFINED ZINC PRODUCED IN THE UNITED STATES 1/

(Metric tons)

Month	Beginning stocks 2/	Production	Shipments	Ending stocks 2/
1998:				
December	9,240	32,000	32,200	9,060
Year total	XX	380,000	381,000	XX
1999:				
January	9,060	30,200	29,700	9,590
February	9,590	27,700	28,900	8,360
March	8,360	31,900	30,100	10,200
April	10,200	30,100	30,900	9,380
May	9,380	30,100	30,100	9,380
June	9,380	28,200 r/	28,600 r/	8,930 r/
July r/	8,930	28,600	28,800	8,770
August r/	8,770	30,600	31,400	7,900
September	7,900 r/	27,200	27,000 r/	8,120 r/
October r/	8,120	31,500	30,700	8,960
November	8,960 r/	31,200 r/	31,400	8,730 r/
December	8,730	27,200	27,200	8,730
January-December	XX	355,000	355,000	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes stocks held at locations other than smelters.

Sources: U.S. Geological Survey and American Bureau of Metal Statistics.

TABLE 3  
ZINC OXIDE PRODUCED IN THE UNITED STATES 1/ 2/

(Metric tons, gross weight)

Month	Beginning stocks	Production	Shipments	Ending stocks
1998:				
December	4,530	12,900	12,400	5,060
Year total	XX	153,000	153,000	XX
1999:				
January	5,060	12,600	12,900	4,810
February	4,810	12,400	12,900	4,270
March	4,270	11,800	11,800	4,270
April	4,270	11,800	12,400	3,680
May	3,680	11,900	11,900	3,640
June	3,640	8,680	9,010	3,310
July	3,310	8,720 r/	8,740 r/	3,290 r/
August r/	3,290	9,150	9,020	3,420
September r/	3,420	9,230	9,070	3,570
October r/	3,570	9,320	9,160	3,730
November r/	3,730	9,880	9,650	3,960
December	3,960	7,910	8,620	3,250
January-December	XX	123,000	125,000	XX

r/ Revised. XX Not applicable.

1/ Excludes impure zinc oxide produced from other processes.

2/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 4  
ESTIMATED DISTRIBUTION OF ZINC OXIDE SHIPMENTS BY INDUSTRY 1/ 2/ 3/

(Metric tons, gross weight)

Industry	1998	1999			
	January-December	October	November	December	January-December
Agriculture	2,540	124	128	122	1,660
Ceramics	7,590	454 r/	473 r/	441	6,380
Chemicals	W	2,020 r/	2,140 r/	1,860	27,200
Paints	6,960	319 r/	332 r/	309	5,060
Photocopying	W	256	273	231	3,080
Rubber	101,000	5,860 r/	6,170 r/	5,530	80,200
Other	35,000	129	136	117	1,530
Total	153,000	9,160 r/	9,650 r/	8,620	125,000

r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other."

1/ Distribution of U.S. producers only. Imports excluded because distribution by industry cannot be distinguished.

2/ May include in-house consumption.

3/ Data are rounded to three significant digits; may not add to totals shown.

TABLE 5  
APPARENT CONSUMPTION OF REFINED ZINC ACCORDING TO INDUSTRY USE AND PRODUCT 1/

(Metric tons)

Industry and product	1998	1999		
	January-December	October	November r/	December 2/
Galvanizing:				
Sheet and strip	528,000	50,200 r/	46,000	44,600
Other	177,000	20,000 r/	17,400	16,600
Total	706,000	70,200 r/	63,400	61,200
Brass and bronze	178,000	17,900 r/	16,100	15,500
Zinc-base alloy	246,000	24,600 r/	19,900	19,900
Other uses 3/	161,000	14,500	14,500	12,600
Grand total	1,290,000	127,000 r/	114,000	109,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data based on reported consumption, stocks and estimated trade data.

3/ Includes zinc used in making zinc dust, desilvering lead, powder, alloys, anodes, chemicals, castings, light metal alloys, rolled zinc, and miscellaneous uses not elsewhere specified.

TABLE 6  
AVERAGE MONTHLY ZINC PRICES 1/

Month	North American	LME cash	
	¢/lb.	¢/lb.	\$/mt.
1998:			
December	48.47	43.49	958.82
January-December	51.43	46.45	1,024.11
1999:			
January	47.06	42.29	932.34
February	50.90	46.13	1,016.90
March	51.27	46.70	1,029.61
April	50.66	46.20	1,018.60
May	52.09	47.19	1,040.33
June	50.13	45.36	1,000.11
July	53.72	48.61	1,071.69
August	56.26	51.26	1,130.16
September	58.65	54.13	1,193.34
October	56.61	52.09	1,148.36
November	56.53	52.02	1,146.77
December	57.94	53.68	1,183.34
January-December	53.48	48.80	1,075.96

1/ Special High Grade.

Source: Platt's Metals Week.

TABLE 7  
U.S. EXPORTS OF ZINC 1/

Material	1998		1999 2/			
	Quantity (metric tons)	Value (thousands)	November		Year to date	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Refined (slab) zinc	2,330	\$2,750	295	\$345	1,580	\$1,830
Ore and concentrate (zinc content)	552,000	248,000	14,400	19,800	500,000	273,000
Waste and scrap (gross weight)	35,000	27,500	2,600	2,310	25,300	22,100
Powders, flakes, and dust (zinc content)	5,530	10,500	259	421	4,490	8,800
Oxide (gross weight)	6,210	11,300	391	691	6,810	11,100
Chloride (gross weight)	1,940	1,290	713	315	3,090	2,030
Sulfate (gross weight)	4,380	2,780	241	160	4,380	2,700
Compounds, other (gross weight)	305	1,170	56	718	757	3,030

1/ Data are rounded to three significant digits.

2/ Data for the current month were not available at time of publication.

Source: Bureau of the Census.

TABLE 8  
U.S. IMPORTS FOR CONSUMPTION OF ZINC 1/

Material	1998		1999 2/			
	Quantity (metric tons)	Value (thousands)	November		Year to date	
			Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Refined (slab) zinc	879,000	\$956,000	80,000	\$92,900	980,000	\$960,000
Ore and concentrate (zinc content)	46,300	23,700	3,090	1,010	58,600	31,700
Waste and scrap (gross weight)	29,200	15,700	3,380	1,830	24,300	12,100
Powders, flakes, and dust (zinc content)	17,600	34,000	1,890	3,690	20,000	35,800
Oxide (gross weight)	58,900	60,100	5,710	6,210	59,000	60,100
Chloride (gross weight)	1,570	1,520	152	125	1,580	1,440
Sulfate (gross weight)	10,400	5,940	1,060	516	9,750	5,890
Compounds, other (gross weight)	1,260	1,730	139	206	1,260	1,350

1/ Data are rounded to three significant digits.

2/ Data for the current month were not available at time of publication.

Source: Bureau of the Census.

TABLE 9  
SHIPMENTS OF ZINC METAL FROM THE NATIONAL DEFENSE  
STOCKPILE 1/

(Metric tons)

Month	Beginning inventory	Shipments	Ending inventory
1998:			
December	204,000	5,100	199,000
Year total	XX	26,000	XX
1999:			
January	199,000	2,150	197,000
February	197,000	2,750	194,000
March	194,000	2,800	191,000
April	191,000	1,640	190,000
May	190,000	736	189,000
June	189,000	800	188,000
July	188,000	1,450	187,000
August	187,000	2,830	184,000
September	184,000	2,310	181,000
October	181,000	--	181,000
November	181,000	2,320	179,000
December	179,000	2,290	177,000
January-December	XX	22,100	XX

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

Source: Defense Logistics Agency.

TABLE 10  
U.S. IMPORTS OF ZINC, BY TYPE OF MATERIAL AND COUNTRY 1/

(Metric tons)

Material and country	General imports			Imports for consumption		
	1998	1999 2/		1998	1999 2/	
		November	Year to date		November	Year to date
Ore and concentrate (zinc content):						
Mexico	17,100	3,090	13,400	17,100	3,090	13,100
Peru	26,900	679	32,600	26,100	--	30,100
Other	3,270	--	15,500	3,130	--	15,400
Total	47,300	3,770	61,500	46,300	3,090	58,600
Blocks, pigs, or slab:						
Brazil	6,750	1,000	17,700	6,750	1,000	17,700
Canada	504,000	43,900	489,000	505,000	43,900	489,000
China	52,800	20,600	59,500	52,800	13,400	52,800
Kazakhstan	27,000	7,710	132,000	27,000	7,710	132,000
Korea, Republic of	42,600	3,340	48,100	51,900	3,340	48,100
Mexico	78,000	5,040	88,600	78,000	5,040	88,600
Peru	47,800	4,100	63,500	47,800	4,100	63,500
Poland	16,100	--	12,300	16,100	--	12,300
Russia	16,400	1,500	15,400	16,400	1,500	15,400
Spain	25,700	--	5,700	25,700	--	5,700
Other	55,700 r/	1,020	65,200	58,200 r/	1,020	72,800
Total	866,000	87,300	979,000	879,000	80,000	980,000
Dross, ashes, & fume (content)	21,100	1,550	18,500	21,100	1,550	18,500
Grand total	934,000	92,600	1,060,000	946,000	84,700	1,060,000
Oxide (gross weight):						
Canada	33,000	3,360	32,900	33,000	3,360	32,900
China	1,890	61	1,470	1,890	61	1,470
Germany	313	140	1,110	313	140	966
Mexico	18,900	1,700	18,600	18,900	1,700	1,110
Netherlands	2,290	127	2,400	2,290	127	18,600
United Kingdom	497	108	644	482	108	644
Other	2,080	217	1,910	2,080	217	3,340
Total	58,900	5,710	59,000	58,900	5,710	59,000
Other (gross weight):						
Waste and scrap	29,200	3,380	24,300	29,200	3,380	24,300
Sheets	16,200	591	19,300	16,900	591	19,300
Powders, flakes, and dust (zinc content)	17,600	1,890	20,000	17,600	1,890	20,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Data for the current month were not available at time of publication.

Source: Bureau of the Census.